

REMARKS/ARGUMENTS

Claims 1 - 14 are pending with claims 1 - 4 and 6 - 8 having been amended and claims 9 - 14 having been added.

The title is objected to as being not descriptive. Applicant proposes that the exiting title be changed to: "PIXEL FOR CMOS IMAGE SENSOR HAVING A SELECT SHAPE FOR LOW PIXEL CROSSTALK."

The specification is objected to for failing to provide a proper antecedent basis for the claimed subject matter, and particularly for claim 6. Claim 6 has been amended to address the Examiner's objection.

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 has been amended to overcome this rejection.

Claims 1 - 2 and 4 - 6 are rejected under 35 U.S.C. § 102(e) as being anticipated by Sakurai et al (U.S. Patent No. 6,633,334) [herein Sakurai].

Claims 3 and 7 - 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakurai in view of Guidash et al. (U.S. Patent No. 5,986,297) [herein Guidash].

Claim 1 has been amended to address typographical errors and not to overcome any of the substantive rejections. Applicant respectfully submits that Claim 1 is not anticipated by Sakurai as Sakurai fails to disclose a photodiode having a substantially square shape. The Office Action indicates that the photodiodes shown in FIGs. 12 and 13 of Sakurai are substantially square. As an initial matter, nowhere in Sakurai are the photodiodes that are shown in Sakurai's FIGs. 12 and 13 (or any other figure) described as being square. Numerous passages in Sakurai describe the Sakurai photodiodes as being rectangular. See Sakurai at col. 4, line 50 and col. 6, lines 22 - 23, for example. A visual inspection of the Sakurai photodiodes shown in Sakurai's FIGs. 12 and 13 similarly shows that the photodiodes are not substantially square. The Sakurai photodiodes have an inward protrusion along the bottom that provides space for the coupling of the transfer transistors to the first aluminum layer. Removing the protrusion would yield a photodiode that interferes with this coupling and hence provide

inoperable circuitry. Therefore, Sakurai fails to disclose a photodiode that is substantially square. Therefore, claim 1 is patentable over Sakurai.

Claim 2 has been amended to address typographical errors and not to overcome any of the substantive rejections. Applicant respectfully submits that Claim 2 is not anticipated by Sakurai. Specifically, the Sakurai transistors that are disposed along the sides of a given photodiode are “not” configured to control the given photodiode. See Sakurai at col. 4, line 38 to col. 5, line 4; col. 5, lines 27 - 37; and col. 6, lines 42 - 50. Sakurai in these passages expressly indicates that transistors disposed adjacent to a diode are configured to control a “diagonally” disposed diode. For example, at col. 6, lines 42 - 50 Sakurai discusses that “PD2 is output not through the amplifier means SF2 and output portion OUT2, but through the amplifier means SF3 and output portion OUT3 surrounding the photodiode portion PD3.” Moreover, PD3 and the transistors that are along the edges of PD3 are “in the diagonal direction” from PD2. See, specifically, Sakurai at col. 6, line 46. Therefore, the control transistors that are configured to control PD2 are not “positioned along at least two sides of the image sensing area,” as recited in claim 2. Therefore, claim 2 is patentable over Sakurai.

Claim 3 has been amended to address typographical errors and not to overcome any of the substantive rejections. Applicant respectfully submits that claim 3 is not obvious over Sakurai in view of Guidash. Applicant agrees with the Examiner that Sakurai fails to show or suggest “a substantially hemispherically-shaped microlens positioned substantially over the image sensing area,” as recited in claim 3. Applicant respectfully disagrees that Guidash makes up for these deficiencies of Sakurai. Specifically, nowhere does Guidash show or suggest that the Guidash lens 6 is substantially hemispherical. Nowhere in Guidash is lens 6 expressly described as being substantially hemispherical. Applicant’s respectfully request that the Examiner indicate the precise language in Guidash indicating that lens 6 is hemispherical. Moreover, the cross-sectional views of lens 6 in Guidash’s FIGs. 1A and 1B do not provide any suggestion that the lens is substantially hemispherical. One of skill in the art would understand that lens 6 is a half-cylinder configured to focus light onto the rectangular diode 11 shown in Guidash’s FIG. 2B. A half-cylinder lens focuses light more effectively on a rectangular diode than would a substantially hemispherical lens disposed substantially above the diode. Therefore,

Guidash fails to show or suggest the "substantially hemispherical-shaped microlens," recited in claim 3. Therefore, Guidash fails to make up for the deficiencies of Sakurai. Therefore, claim 3 is patentable over Sakurai in view of Guidash.

Claims 4 and 6 have been amended to include similar limitations of claims 1 and 3 that are distinguished from Sakurai and Guidash above, and should be patentable over Sakurai and Guidash for at the least the foregoing reasons.


Regarding the Examiner's concerns of inconsistent inventorship between the title sheet of the provisional application, and the non-provisional application, Applicant respectfully points out that the declaration for the non-provisional application lists a single named inventor who signed the declaration.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,


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